REMARKS/ARGUMENTS

The Examiner is thanked for withdrawing the 35 USC 112 rejections and the previous prior art rejections.

However, it is noted that the Examiner has made new prior art rejections which are directed to most of the claims, although the Examiner continues to find patentable subject matter with respect to claims 24 and 25.

The Applicant believes the rejections are improper and therefore urges the Examiner to withdraw them based upon the following observations.

First, Orenstein, cited by the Examiner is concerned with next generation optical communication systems and Orenstein teaches the reader that InP lasers dominate the optical communication lasers which are used. Note column 3, lines 29-42 of Orenstein. Note in particular the use of lasers which emit light at 1.55 μm. It is believed that those skilled in the art realize that InP lasers operating in this frequency are typically used for long-haul communications applications.

Yamada, on the other hand, teaches a hybrid integration platform, essentially an optical bench. Note, in particular, the first summary of the invention set forth in the paragraph bridging columns 3 and 4 of Yamada.

Yamada mentions advantages with respect to the use of silicon optical benches one of which is that silicon enjoys good thermal characteristics. But Yamada tells us more including the fact that a groove can be used in the silicon substrate to help position an optical fiber cable which is laid upon the silicon substrate as shown in Figure 9, cited by the Examiner, in Yamada. Yamada also tells the reader about a "substantial loss" when using silicon substrates - see the paragraph bridging columns 2 and 3. So the reader knows that silicon is far from perfect.

It is believed that a reader understood at the time that this application was filed that it was not a trivial task to grow InP on a silicon substrate. So it is assumed that the Examiner is nottrying to assert that it the official action.

Rather the Examiner seems to assume that a person reading Orenstein would be motivated by Yamada to do away with Orenstein's InP materials, which are so convenient for his 1.55 μm lasers, and instead be motivated to use a silicon substrate and also, according to the Examiner, a silicon waveguide.

It is submitted, with all due respect, there are a number of problems in this analysis.

First, the Examiner assumes that there is a thermal problem associated with Orenstein's device. However, because silicon has good thermal characteristics, that does not mean that it is automatically obvious to replace all the InP lasers in the world with silicon lasers. Does the Examiner believe that a silicon laser at 1.55 μm should be used in long-haul communications systems of the type envisioned by Orenstein? If so, what is that belief based on? Does the Examiner have some art in mind? If so, it should be cited. If this belief is based upon facts within the Examiner's personal knowledge, then please supply the affidavit required by 37 CFR 1.104.

Note also that Yamada is concerned with an optical bench. It is submitted that those skilled in the art realize that, when you have an optical bench, certain things become rather accessible. Note the fact that Yamada teaches the use of a v-groove to center the location of the optical fiber 31 (his wave guide) with respect to the silicon substrate 30. Note also that it is nicely exposed on the top of the optical bench so that it can be accessed.

Then note where the waveguides are in Figure 5a of Orenstein. They are sandwiched within the InP layers. So why not move them to the top of the substrate as taught by Yamada? If heat is an issue, which the Examiner asserts, wouldn't Orenstein have put them some place else? Or is it that heat really is not an issue at all in the Orenstein device?

If the Examiner is trying to assert that it would be obvious to make an InP laser on a silicon substrate, where is there any support for that contention? Silicon and InP have different lattice constants and different thermal expansion characteristics. And if temperature is an issue, as suggested by the Examiner, would not placing an InP laser on a silicon substrate just exacerbate the perceived thermal issue given the effect of the stresses induced by the thermal expansion mismatch between InP and silicon?

The Examiner mentions silicon waveguides. Note however, that claim 1, for example, recites a "silica" waveguide, not a "silicon" waveguide.

The Examiner basically picks and chooses the elements of Yamada which can supposedly be combined with Orenstein since the Examiner obviously does not try to combine all of the teachings of Yamada with Orenstein. But this very picking and choosing evidences the fact that the Examiner is relying on hindsight reconstruction of Applicant's claims, in essence using them as a roadmap to the prior art, as opposed to looking at what these references really teach.

It is respectfully submitted that persons skilled in the art who are familiar with Yamada realized that even though silicon may have nice thermal characteristics, that does not mean that every time someone sees an InP laser that they are immediately motivated to do away with the thing and replace it with a silicon-based laser instead or to try to place it on a silicon substrate! That is more than clear from Orenstein's own teaching that InP laser dominate the optical communication laser field. As such, it is respectfully submitted that the Examiner reads too much into the prior art. A person skilled in the art would be motivated to continue to use conventional InP lasers in that art.

Moreover, the Examiner is respectfully reminded that just because references possibly can be combined or modified is not sufficient to establish a prima facie case of obviousness. Please see MPEP § 2143 which sets forth the basic requirements which the Examiner must establish to make a prima facie case of obviousness. The Examiner's position can be boiled down to an assertion that conventional InP lasers are dead based

upon Yamada, and therefore, every time an InP laser is encountered in the prior art, a person of ordinary skill in the art would be motivated to replace it with a silicon laser and/or install it on a silicon substrate. It is respectfully submitted that that is simply not the case as evidenced by the pervasiveness of conventional InP lasers. If the Examiner's position were correct, no one would ever use a conventional InP laser.

Reconsideration of the rejection is respectfully requested.

New claims 27 - 30 are added by the response. New independent claim 29 is similar to claim 17 but recites a group III-V gain element and a tunable group III-V Fabry-Perot etalon. The other new claims are dependent claims which are not believed to need any particular explanation as they rather short. Claim 25 is amended to correct an editorial error.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 12-0415. In particular, if this response is not timely filed, then the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136 (a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 12-0415.

I hereby certify that this correspondence is being deposited with the United States Post Office with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on

May 15, 2007
(Date of Deposit)

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5-15-2007
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